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# ANALYSIS OF FINANCIAL DISTRESS ASSESSMENT USING THE ALTMAN MODEL (ZSCORE) IN FOOD AND BEVERAGE COMPANIES LISTED ON THE INDONESIA STOCK EXCHANGE FOR THE 2017-2021 PERIOD

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***Abstract***

This study aims to determine the financial distress assessment of the company The food and beverage subsector is listed on the Indonesia Stock Exchange using the Altman Z-Score model. The sample was selected using purposive sampling method. Seventeen companies in the food and beverage subsector were selected based on criteria listed on the Indonesia Stock Exchange (IDX) and financial reports published regularly for the last five years from 2017 to 2021. Secondary data comes from the website www.idx.co.id. The results show that the Altman Z-Score model can be implemented in detecting the possibility of financial distress in food and beverage subsector companies.there are three companies for five consecutive years in a state of Distress and several in the last two years experiencing financial distress,caused by variable X5 decreased so that sales or income decreased.

Keyword*: Financial Distress, Altman z-score, Food and Beverage companies*

## A. INTRODUCTION

Competition in companies that is getting tougher in this era of globalization forces companies to try harder to maintain the continuity of their business with various strategies that have been designed to maintain consumers as a source of income. Intense competition requires companies to carry out good management, so that they will be able to dominate a wide market share if they have good performance.

Facing competition, every company is required to continue to improve the effectiveness and efficiency of company management by evaluating company strategies and policies. Evaluation here is to assess the company's performance and health in winning the competition, economic growth, increasing profits, return on investment, cost efficiency, and creating economic value for the company. (Ngariwati, Maria and Martinus, 2010).

Currently there are various kinds of economic indicators used to measure performance in business. The use of indicators as a measuring tool for a variable is

very necessary, this is related to providing a means of convenience in understanding its meaning. It is not easy to define an indicator as a measure of a variable, because the indicator must be able to accurately represent the variable to be measured, so that it can be scientifically accepted and justified as an appropriate indicator for measuring variables. (Sudiyatno and Elen, 2010). One indicator of a company having good performance can be seen from its financial and financial aspects.

The financial statements issued by the company are a source of information regarding the company's financial position, performance and changes in financial position which are very useful to support the right decision making so that an analytical tool is needed that links several ratios at once to assess the company's financial condition.

Financial distress can often be interpreted as a stage close to bankruptcy which is characterized by uncertainty about future profitability. One way that management can measure financial condition is to analyze the company's financial statements in previous years using a discriminant analysis test tool (z-score) using five variables, namely X1, X2, X3, X4, and X5. The z-score model is a multivariate analysis model created by Edward I. Altman based on the results of his research in 1968, which functions to predict corporate bankruptcy with a relatively reliable level of accuracy and accuracy.

## B. THEORETICAL BASIS

### *Bankruptcy*

Basically the company will always try to exist in the long term. However, market conditions that are constantly changing sometimes make it difficult for companies to adapt so that companies experience a prolonged crisis and head towards bankruptcy. Bankruptcy is usually interpreted as a company's failure to carry out company operations to generate profits (Supardi and Mastuti, 2003)

### *Financial Difficulties (Financial Distress)*

Financial distress is the initial stage before bankruptcy. The company will experience financial distress if the company's operating cash flow is unable to meet short-term obligations such as paying interest on loans that are due. The greater the liabilities owned by the company, the greater the risk of financial distress (Nasution, 2015).

### Z-Score

The Altman z-score model is an indicator to measure the potential bankruptcy of a company. A number of studies have been conducted to determine the usefulness of financial ratio analysis in predicting the failure or bankruptcy of a company. One of the studies regarding this prediction is multiple discriminant analysis (MDA) which is commonly called the Altman Z-Score model method. Altman's rationale for using discriminant analysis stems from the limitations of ratio analysis, namely that his methodology is basically an aberration, meaning that each ratio is tested separately.

The financial variables or ratios used in the discriminant analysis of the Altman model are (Endri, 2009 in Ferbianasari, 2012):

1. Net Working Capital to Total Assets (WCTA)
   This ratio shows the company's ability to generate net working capital from the total assets it owns. This ratio is calculated by dividing net working capital by total assets. Net working capital is obtained by means of current assets minus current liabilities. With the ratio formula as follows:
   $$X1 : WCTA = \frac{(\text{Working Capital})}{(\text{Total Assets})}$$
2. Retained Earnings to Total Assets(RETA)
   This ratio shows the company's ability to generate retained earnings from the company's total assets. Retained earnings are profits that are not distributed to shareholders. With the ratio formula as follows:
   $$X2 : RETA = \frac{(\text{Retained Earnings})}{(\text{Total Assets})}$$
3. Earnings Before Interest and Tax to Total Assets (EBITTA)
   This ratio shows the company's ability to generate profits from company assets, before interest and tax payments. With the ratio formula as follows:
   $$X3:EBITTA = \frac{(\text{Earning Before Interest and Taxes})}{(\text{Total Asset})}$$
4. Market Value of Equity to Book Value of Debt(MVEBVL)
   This ratio shows the company's ability to fulfill obligations from the market value of its own capital (common shares). With the ratio formula as follows:
   $$X4:MVEBVL = \frac{(\text{Market Value of Equity})}{(\text{Book Value of Total Debt})}$$
5. Sales to Total Assets
   This ratio shows whether the company generates sufficient business volume compared to the investment in its total assets. With the ratio formula as follows:
   $$X5: STA = \frac{(\text{Sales})}{(\text{Total Asset})}$$

Ramadhani and Lukviarman (2009) in Ferbianasari (2012) stated that after conducting research on the selected variables and samples, Altman produced the first bankruptcy model. The bankruptcy equation is intended to predict a publicly traded manufacturing company. The equation of the first Altman model is:

$$Z = 1.2\ (WCTA) + 1.4\ (RETA) + 3.3\ (EBITTA) + 0.6\ (MVEBVL) + 1\ (STA)$$

Information:

Z = bankruptcy index
X1 = working capital / total assets
X2 = retained earnings / total assets
X3 = earnings before interest and taxes/total assets
X4 = market value of equity / book value of total debt
X5 = sales / total assets.

## C. RESEARCH METHODS

### Research design

The research used in this study is descriptive research, namely research conducted to find out and explain the characteristics of the variables studied in a situation.

### Research Sites and Times

This research was conducted on companiesFood & Beverage Subsector Listed on the Indonesia Stock Exchange in 2017-2021. This research was conducted in October 2022 until completion.

### Population and Sample

The population in this study are all companies in the Food & Beverage Subsector that are listed on the Indonesia Stock Exchange in 2017-2021 with a total of 18 companies. The sample is part of the number and characteristics possessed by a predetermined population (Ferdinand, 2014: 171 inYusnita, 2017). Sampling in this study using purposive sampling method. This method limits the selection of samples based on certain criteria. The criteria selected in sampling in this study are as follows:

1. Food & Beverage Subsector Companies Listed on the Indonesia Stock Exchange 2017-2021 on an ongoing basis
2. Companies that publish financial reports as of December 31 regularly for 5 years according to the research year
3. Published financial statements are stated in the Indonesian currency, namely Rupiah (Rp) this is because this research was conducted in Indonesia.

Based on the sample selection criteria above, the number of samples that meet the criteria in this study totaled 17 Food & Beverage Subsector companies listed on the Indonesia Stock Exchange for 2017-2021.

### Method of collecting data

This research uses secondary data with data collection methods using library research or Library Research, namely by collecting data and analyzing any literature related to research problems with the aim of obtaining definitions, theories and analysis to be used in this study(Irfan & Kiswara, 2013), as well as the documentation method, namely by recording or documenting the data obtained fromwww.idx.co.idand the website of each company.

### Operational Definition and Research Variable Indicators

According to Sugiyoni (2012) a research variable is an attribute or trait or value of a person, object or activity that has a certain variance that is determined by the researcher to be studied and then drawn conclusions. In this study the authors divide the variables into two types based on the relationship between one variable and another

## Independent Variable

Independent variables are variables that can affect the emergence of the dependent or dependent variable. In this study, the independent variable is financial ratios using the Altman Z-Score method. These ratios are: WCTA(Working Capital to Total Assets), RETA(Retained Earning to Total Assets), EBITTA(Earning Before Interest and Taxes to Total Assets), MVEBL(Market Value of Equity to Book Value of Total Debt) and STA( Sales to Total Assets). After the calculation of the Z-score with the financial ratios included in a discriminant equation is carried out, it will produce a certain score. This number has a certain explanation or interpretation. In this model, companies that have a Z score $>$ 2.99 are classified as healthy companies, while companies that have a Z score $<$ 1. 81 are classified as potential bankrupt companies. Furthermore, a score of 1.81 to 2.99 is classified as a company in the gray area or gray area (Muslich, 2000).

## Dependent Variable

The dependent variable or dependent variable are the factors that are observed to determine the influence of the independent variables, namely the factors that appear or do not appear, which are determined by the researcher. The dependent variable or dependent variable from this study is the condition of a company that is healthy or experiencing financial distress from the results of the Z-Score assessment.

## Analysis Method

This research was conducted using the financial statement analysis method with discriminant analysis of the Altman Z-score based on financial report data obtained from the Indonesian Stock Exchange website (http://www.idx.co.id) which will be used to measure the company's financial performance. The equation used with the Altman model is formulated as follows:

$Z = 1.2\ (WCTA) + 1.4\ (RETA) + 3.3\ (EBITTA) + 0.6\ (MVEBVL) + 1\ (STA)$

The calculation of this equation uses five variable ratios, namely:

1. Working capital to total assets (Working Capital to Total Assets)
2. Retained Earnings to Total Assets
3. Income before tax and interest on total assets (Earnings Before Interest and Taxes to Total Assets)
4. Book value of equity to book value of debt (Book Value Equity to Book Value of Total Debt)
5. Sales to total assets (Sales to Total Assets)

Calculations using this equation can be done to analyze companies that have gone public and companies that have not gone public.

## RESEARCH RESULT

The results of the Z-Score calculations for the 17 companies that were the research samples are described below.

1) Akasha Wira International Tbk

   Table 1. Z-Score Calculation Results for PT Akasha Wira International Tbk

| Ratio | 2017 | 2018 | 2019 | 2020 | 2021 | dari 2017 ke 2018 | dari 2018 ke 2019 | dari 2019 ke 2020 | dari 2020 ke 2021 |
|---|---|---|---|---|---|---|---|---|---|
| x1 | 0.06 | 0.12 | 0.21 | 0.38 | 0.31 | 0.06 | 0.10 | 0.16 | (0.07) |
| x2 | 0.46 | 0.38 | 0.31 | 0.12 | 0.11 | (0.08) | (0.07) | (0.18) | (0.01) |
| x3 | 0.09 | 0.10 | 0.15 | 0.17 | 0.25 | 0.02 | 0.04 | 0.02 | 0.08 |
| x4 | 1.01 | 1.21 | 2.23 | 1.00 | 1.00 | 0.19 | 1.03 | (1.23) | 0.00 |
| x5 | 0.41 | 0.44 | 0.45 | 0.33 | 0.53 | 0.03 | 0.004 | (0.11) | 0.20 |
| Z-Score | Z = 1,2 (X1)+1,4 (X2)+3,3 ( X3) + 0,6 (X4) + 1 (X5) | | | | | | | | |
| | 2.03 | 2.18 | 2.96 | 2.12 | 2.49 | | | | |
| | Grei areaGrei area | | Grei area | Grei area | Grei area | | | | |

Source: Processed Data

PT Akasha Wira International Tbk has been in the Grei Zones position for five consecutive years. In 2017 to 2019 it continued to increase, but in 2020 it decreased because variable X2 retained earnings decreased. And in 2021 it will increase again. This shows that the company is quickly increasing retained earnings as a source of funds for procuring assets for the sustainability of the company.

**2.** PT FKS FOOD SEJATERA Tbk

Table 2.Z-Score Calculation Results of PT FKS Sejahtera Tbk

| Ratio | 2017 | 2018 | 2019 | 2020 | 2021 | dari 2017 ke 2018 | dari 2018 ke 2019 | dari 2019 | dari 2020 ke 2021 |
|---|---|---|---|---|---|---|---|---|---|
| x1 | 2.10 | 2.85 | 0.62 | 0.44 | 0.41 | 0.75 | (2.23) | (0.18) | (0.03) |
| x2 | -2.77 | -3.15 | -2.45 | -1.58 | -1.77 | (0.38) | 0.69 | 0.87 | (0.19) |
| x3 | -2.57 | -0.01 | 0.80 | 1.06 | 0.03 | 2.57 | 0.80 | 0.26 | (1.03) |
| x4 | (0.63) | (0.66) | (0.47) | 0.70 | 0.87 | (0.03) | 0.19 | 1.17 | 0.17 |
| x5 | 0.98 | 0.87 | 0.81 | 0.64 | 0.86 | (0.11) | (0.06) | (0.17) | 0.23 |
| Z_Score | Z = 1,2 (X1)+1,4 (X2)+3,3 ( X3) + 0,6 (X4) + 1 (X5) | | | | | | | | |
| | (9.24) | (0.52) | 0.46 | 2.87 | (0.50) | | | | |
| | Distress zone | Distres zones | Distres zoneses | grey zones | distres zones | | | | |

Source: Processed Data

The results of the Z-Score analysis calculation above can be seen that in 2017, 2018, 2019, and 2021 PT FKS Food Sejahtera Tbk with a Z value below 1.81 means that the company is in the bankruptcy category or Distress Zones.

**3.** Tri Banyan Tirta Tbk

Table 3.Z-Score Calculation Results of Tri Banyan Tirta Tbk

| Ratio | 2017 | 2018 | 2019 | 2020 | 2021 | dari 2017 ke 2018 | dari 2018 ke 2019 | dari 2019 ke 2020 | dari 2020 ke 2021 |
|---|---|---|---|---|---|---|---|---|---|
| x1 | 0.0026 | 0.0014 | 0.0024 | 0.0527 | 0.063 | (0.0012) | 0.0011 | 0.0011 | 0.0103 |
| x2 | 0.11 | 0.10 | 0.13 | 0.14 | 0.16 | (0.0054) | 0.0260 | 0.0260 | 0.0175 |
| x3 | 0.0000622 | 0.0000572 | 0.000077 | 0.06657 | 0.07441 | (0.0000) | 0.0000 | 0.0000 | 0.0078 |
| x4 | 0.839 | 0.57 | 0.75 | 0.81 | 0.86 | (0.2730) | 0.1836 | 0.1836 | 0.0586 |
| x5 | 1.26 | 1.45 | 1.6 | 1.35 | 1.91 | 0.1900 | 0.1500 | 0.1500 | 0.5600 |
| Z-Score | Z = 1,2 (X1)+1,4 (X2)+3,3 ( X3) + 0,6 (X4) + 1 (X5) | | | | | | | | |
| | 1.92 | 1.93 | 2.23 | 2.31 | 2.97 | | | | |
| | Grei area | Grei area | Grei area | Grei area | Grei area | | | | |

Source: Processed Data

In 2021 the Z-Score value will continue to increase to 2.97. If the company can continue to improve its performance and continue to increase the value of the company, then in the coming years there is a possibility that the company can be in safe zones. The company must improve its ability to process profits to assets so that in the following year it can get out of the gray zones.

**4.** Budi Starch & Sweetener Tbk

Table 4. Z-Score Calculation Results of Budi Starch & Sweetener Tbk

| Ratio | 2017 | 2018 | 2019 | 2020 | 2021 | dari 2017 ke 2018 | dari 2018 ke 2019 | dari 2019 ke 2020 | dari 2020 ke 2021 |
|---|---|---|---|---|---|---|---|---|---|
| x1 | 0.01 | (0.05) | (0.02) | (0.04) | (0.04) | (0.06) | 0.03 | (0.02) | (0.00) |
| x2 | -0.10 | -0.13 | -0.13 | -0.14 | -0.15 | (0.03) | (0.01) | (0.01) | (0.01) |
| x3 | -0.03 | -0.02 | -0.005 | 0.0002 | 0.004452 | 0.01 | 0.02 | 0.01 | 0.00 |
| x4 | 0.61 | 0.54 | 0.53 | 0.51 | 0.50 | (0.07) | (0.01) | (0.02) | (0.01) |
| x5 | 0.132 | 0.160 | 0.184 | 0.160 | 0.208 | 0.03 | 0.02 | (0.02) | 0.05 |
| | Z = 1,2 (X1)+1,4 (X2)+3,3 ( X3) + 0,6 (X4) + 1 (X5) | | | | | | | | |
| Z_ Score | 0.27 | 0.17 | 0.27 | 0.22 | 0.26 | | | | |
| | Distres zones | Distres zones | Distres zones | Distres zones | Distres zones | | | | |

Source: Processed Data

Budi Starch & Sweetener Tbkfor 5 consecutive years in a state of distress, this is of course very dangerous for the company if it does not manage its finances properly.

5. Wilmar Cahaya Indonesia Tbk

Table 5. Z-Score Calculation Results of Wilmar Cahaya Indonesia Tbk

| Ratio | 2017 | 2018 | 2019 | 2020 | 2021 | dari 2017 ke 2018 | dari 2018 ke 2019 | dari 2019 ke 2020 | dari 2020 ke 2021 |
|---|---|---|---|---|---|---|---|---|---|
| x1 | (0.07) | (0.42) | (0.54) | (0.46) | (0.47) | (0.35) | (0.12) | 0.08 | (0.00) |
| x2 | 0.47 | 0.61 | 0.62 | 0.63 | 0.66 | 0.14 | 0.01 | 0.01 | 0.03 |
| x3 | 0.12 | 0.12 | 0.20 | 0.13 | 0.13 | 0.00 | 0.08 | (0.06) | 0.00 |
| x4 | 1.84 | 14.34 | 4.32 | 4.12 | 4.48 | 12.50 | (10.02) | (0.20) | 0.35 |
| x5 | 3.05 | 3.1 | 2.24 | 2.31 | 3.15 | 0.05 | (0.86) | 0.07 | 0.84 |
| Z_- | Z = 1,2 (X1)+1,4 (X2)+3,3 ( X3) + 0,6 (X4) + 1 (X5) | | | | | | | | |
| Score | 5.10 | 12.44 | 5.71 | 5.55 | 6.64 | | | | |
| | Safe zones | Safe zones | Safe zones | Safe zone | Safe zones | | | | |

Source: Processed Data

Based on the table above shows that for five consecutive years the companyWilmar Cahaya Indonesia Tbkstay in the Safe Zones position. An increase in the value of Z from 2017 to 2018 was followed by an increase in the value of the variables X2 and X4 indicating that PTWilmar Cahaya Indonesia Tbkcan effectively produce retained earnings from total assets better because the company has a long standing so that it can properly manage retained earnings and address the company's ability to fulfill obligations from the market value of its own capital. While the variables X1, X3 and X5 have decreased in 2019 to 2021.

6. Delta Djakarta Tbk

Table 6. Z-Score Calculation Results for Delta Djakarta Tbk

| Ratio | 2017 | 2018 | 2019 | 2020 | 2021 | dari 2017 | dari 2018 ke 2019 | dari 2019 ke 2020 | dari 2020 ke 2021 |
|---|---|---|---|---|---|---|---|---|---|
| x1 | (0.69) | (0.66) | (0.68) | (0.66) | (0.52) | 0.04 | (0.03) | 0.02 | 0.14 |
| x2 | 0.82 | 0.82 | 0.82 | 0.80 | 0.74 | (0.01) | 0.01 | (0.02) | (0.06) |
| x3 | 0.43 | 0.43 | 0.42 | 0.30 | 0.36 | (0.00) | (0.01) | (0.12) | 0.06 |
| x4 | 5.83 | 5.37 | 5.71 | 4.96 | 3.38 | (0.47) | 0.35 | (0.75) | (1.58) |
| x5 | 0.57 | 0.58 | 0.58 | 0.44 | 0.52 | 0.01 | - | (0.14) | 0.08 |
| | Z = 1,2 (X1)+1,4 (X2)+3,3 ( X3) + 0,6 (X4) + 1 (X5) | | | | | | | | |
| _ Scor | 5.81 | 5.57 | 5.72 | 4.73 | 4.16 | | | | |
| | Safe zones | Safe zones | Safe zones | Safe zone | Safe zones | | | | |

Source: Processed Data

Based on the table above shows that for five consecutive years the companyWilmar Cahaya Indonesia Tbkstay in the Safe Zones positionbut from 2017 to 2021 it continues to decline if the companynot managing their finances properly will have an impactbad for the company.

7. Indofood Cbp Sukses Makmur Tbk

Table 7. Z-Score Calculation Results of Indofood Cbp Sukses Makmur Tbk

| Ratio | 2017 | 2018 | 2019 | 2020 | 2021 | dari 2017 ke 2018 | dari 2018 ke 2019 | dari 2019 | dari 2020 ke 2021 |
|---|---|---|---|---|---|---|---|---|---|
| x1 | 0.31 | 0.20 | 0.26 | 0.11 | 0.13 | (0.11) | 0.06 | (0.15) | 0.02 |
| x2 | 0.40 | 0.44 | 0.48 | 0.22 | 0.23 | 0.03 | 0.04 | (0.26) | 0.01 |
| x3 | 0.17 | 0.19 | 0.19 | 0.09 | 0.10 | 0.02 | 0.00 | (0.10) | 0.01 |
| x4 | 1.80 | 1.95 | 2.22 | 1.03 | 0.79 | 0.15 | 0.27 | (1.19) | (0.23) |
| x5 | 1.12 | 1.11 | 1.09 | 0.45 | 0.48 | (0.01) | (0.02) | (0.64) | 0.03 |
| | Z = 1,2 (X1)+1,4 (X2)+3,3 ( X3) + 0,6 (X4) + 1 (X5) | | | | | | | | |
| Z_ Score | 3.68 | 3.75 | 4.02 | 1.80 | 1.75 | | | | |
| | Safe zones | Safe zones | Safe zones | distres zones | distress Zones | | | | |

Source: Processed Data

The company Indofood CBP Sukses Makmur Tbk for three consecutive years continues to experience an increase in the value of Z. This is influenced by variables X2 and X4 which increase every year indicating that the company Indofood CBP Sukses Makmur Tbk can effectively generate better retained earnings from total assets. However, from 2020 to 2021 the company will experience a very drastic decrease in the Z value, namely 1.80 and 1.75, this will be followed by a decrease in all X variables.

8. Infood Sukses Makmur Tbk

Table 8. Z-Score Calculation Results of Infood Sukses Makmur Tbk

| Ratio | 2017 | 2018 | 2019 | 2020 | 2021 | dari 2017 ke 2018 | dari 2018 ke 2019 | dari 2019 | dari 2020 ke 2021 |
|---|---|---|---|---|---|---|---|---|---|
| x1 | 0.13 | 0.02 | 0.07 | 0.06 | 0.08 | 0.11 | (0.05) | 0.01 | (0.01) |
| x2 | 0.24 | 0.24 | 0.28 | 0.19 | 0.20 | 0.00 | (0.04) | 0.09 | (0.01) |
| x3 | 0.10 | 0.09 | 0.09 | 0.08 | 0.09 | 0.00 | 0.00 | 0.02 | (0.02) |
| x4 | 1.42 | 1.29 | 1.29 | 0.94 | 0.93 | 0.13 | (0.00) | 0.35 | 0.01 |
| x5 | 0.79 | 0.76 | 0.79 | 0.5 | 0.55 | 0.03 | (0.03) | 0.29 | (0.05) |
| | Z = 1,2 (X1)+1,4 (X2)+3,3 ( X3) + 0,6 (X4) + 1 (X5) | | | | | | | | |
| Z_ Score | 2.46 | 2.21 | 2.35 | 1.67 | 1.80 | | | | |
| | Grei zones | Grei zones | Grei zones | distres zones | Distres zones | | | | |

Source: Processed Data

The company Infood Sukses Makmur Tbk has been in the gray zones category for three years in a row where the X variable is unstable so the Z value does not increase. In 2020 all X variables have decreased and are dominated by X2 and X4, this shows that the company is not effectively generating retained earnings from total assets. If the company does not manage finances properly, it will have a negative impact on the company.

9. Multi Bintang Indonesia Tbk

Table 9. Result of Multi Bintang Indonesia Tbk Z-Score Calculation

| Ratio | 2017 | 2018 | 2019 | 2020 | 2021 | dari 2017 ke 2018 | dari 2018 ke 2019 | dari 2019 ke 2020 | dari 2020 ke 2021 |
|---|---|---|---|---|---|---|---|---|---|
| x1 | (0.09) | (0.12) | (0.15) | (0.05) | (0.15) | (0.03) | (0.03) | 0.10 | (0.10) |
| x2 | 0.41 | 0.40 | 0.39 | 0.48 | 0.37 | (0.02) | (0.01) | 0.10 | (0.12) |
| x3 | 0.71 | 0.58 | 0.58 | 0.29 | 0.30 | (0.13) | 0.00 | (0.29) | 0.02 |
| x4 | 0.74 | 0.68 | 0.65 | 0.97 | 0.60 | (0.06) | (0.02) | 0.32 | (0.37) |
| x5 | 1.35 | 1.26 | 1.28 | 0.68 | 0.84 | (0.09) | 0.02 | (0.60) | 0.16 |
| | Z = 1,2 (X1)+1,4 (X2)+3,3 ( X3) + 0,6 (X4) + 1 (X5) | | | | | | | | |
| _ Scor | 4.60 | 3.99 | 3.95 | 2.83 | 2.54 | | | | |
| | Safe zones | Safe zones | Safe zones | grei zones | grei zones | | | | |

Source: Processed Data

From 2017 to 2019, the Multi Bintang Indonesia Tbk company is in the Safe zones category with a 2019 z value of 3.95. ForIn 2020 and 2021 the variable X5 dominates the decline in the value of Z in 2020 and 2021, which illustrates that the company has experienced a decrease in sales or revenue.

**10.** Mayora Indah Tbk

Table 10. Z-Score Calculation Results for Mayora Indah Tbk

| Ratio | 2017 | 2018 | 2019 | 2020 | 2021 | dari 2017 | dari 2018 | dari 2019 | dari 2020 |
|---|---|---|---|---|---|---|---|---|---|
| x1 | 0.42 | 0.45 | 0.48 | 0.47 | 0.37 | 0.03 | 0.03 | 1.00 | (0.10) |
| x2 | 0.45 | 0.45 | 0.48 | 0.53 | 0.53 | (0.00) | 0.04 | 0.05 | 0.00 |
| x3 | 0.16 | 0.15 | 0.15 | 0.14 | 0.09 | (0.02) | 0.00 | (0.01) | (0.05) |
| x4 | 0.97 | 0.94 | 1.08 | 1.33 | 1.33 | (0.03) | 0.14 | 0.05 | 0.00 |
| x5 | 1.39 | 1.36 | 1.31 | 1.23 | 1.4 | (0.03) | (0.05) | (0.01) | 0.17 |
| | Z = 1,2 (X1)+1,4 (X2)+3,3 ( X3) + 0,6 (X4) + 1 (X5) | | | | | | | | |
| _ Scor | 3.65 | 3.58 | 3.70 | 3.81 | 3.68 | | | | |
| | Safe zones | Safe zones | Safe zones | safe zones | safe zones | | | | |

Source: Processed Data

The table above shows PT. Mayora Indah, Tbk has been in safe zones for five consecutive years. In 2021 the company experienced a decrease in the value of Z, namely 3.68 which was affected by a decrease in the variable X3, this indicated that the company had experienced a decline in the company's performance to generate profits. Ratio, this is the ratio that is considered the most influential in assessing the company's financial condition. But in general this proves that the company is trying its best to manage all of its financial elements so that it can function properly.

**11.** Prashida Aneka Niaga Tbk

Table 11. Z-Score Calculation Results of Prashida Aneka Niaga Tbk

| Ratio | 2017 | 2018 | 2019 | 2020 | 2021 | dari 2017 ke 2018 | dari 2018 ke 2019 | dari 2019 ke 2020 | dari 2020 ke 2021 |
|---|---|---|---|---|---|---|---|---|---|
| x1 | 0.56 | 0.53 | 0.37 | (0.11) | (0.24) | (0.03) | (0.15) | (0.49) | (0.13) |
| x2 | 0.08 | 0.08 | 0.07 | -0.33 | -0.48 | (0.00) | (0.01) | (0.40) | (0.15) |
| x3 | 0.00010 | -0.00360 | -0.0036 | -0.01 | -0.07 | (0.004) | 0.00 | (0.01) | (0.06) |
| x4 | 0.77 | 0.53 | 0.30 | 0.19 | 0.07 | (0.23) | (0.23) | (0.11) | (0.11) |
| x5 | 2.02 | 1.91 | 1.60 | 1.16 | 1.22 | (0.11) | (0.31) | (0.44) | 0.06 |
| | Z = 1,2 (X1)+1,4 (X2)+3,3 ( X3) + 0,6 (X4) + 1 (X5) | | | | | | | | |
| Scor | 3.26 | 2.96 | 2.31 | 0.64 | 0.08 | | | | |
| | Safe zones | grei zones | grei zones | distress zones | distress zones | | | | |

Source: Processed Data

The company Prashida Aneka Niaga Tbk in 2017 was in safe zones with a Z value of 3.26, but in 2018-2019 it was in the gray zones where a decline occurred where almost all variables experienced a decrease. The variable that dominates the decline is the variable X5 which describes a company that is not efficient in using all of the company's assets to generate sales and earn profits. In 2020-2021 a drastic decline has also occurred so that the company is in the Distress zones or the bankrupt category.

**12.** Nipoon Indosari Corporindo Tbk

Table 12. Z-Score Calculation Results for Nipoon Indosari Corporindo Tbk

| Ratio | 2017 | 2018 | 2019 | 2020 | 2021 | dari 2017 ke 2018 | dari 2018 ke 2019 | dari 2019 ke 2020 | dari 2020 ke 2021 |
|---|---|---|---|---|---|---|---|---|---|
| x1 | 0.28 | 0.31 | 0.90 | 0.26 | 0.19 | 0.02 | 0.59 | (0.64) | (0.07) |
| x2 | 0.26 | 0.30 | 0.33 | 0.36 | 0.38 | 0.04 | 0.03 | 0.03 | 0.02 |
| x3 | 0.06 | 0.04 | 0.04 | 0.06 | 0.10 | (0.01) | 0.00 | 0.01 | 0.04 |
| x4 | 1.82 | 1.98 | 1.15 | 2.64 | 2.12 | 0.16 | (0.83) | 1.49 | (0.51) |
| x5 | 0.54 | 0.62 | 0.71 | 0.72 | 0.78 | 0.08 | 0.09 | 0.01 | 0.06 |
| | Z = 1,2 (X1)+1,4 (X2)+3,3 ( X3) + 0,6 (X4) + 1 (X5) | | | | | | | | |
| _ Scor | 2.52 | 2.74 | 3.08 | 3.30 | 3.14 | | | | |
| | grei zones | grei zones | Safe Zones | Safe Zones | Safe Zones | | | | |

Source: Processed Data

The table above shows PT. Nippon Indosari Corpindo Tbk from 2017 to 2018 is in the gray zones where only variable X3 does not experience an increase. In 2019 to 2021 the company will be in safe zones. This was followed by an increase in the X2 variable each year which could effectively produce better retained earnings from total assets.

**13.** Sekar Bumi Tbk

Table 12. Z-Score Calculation Results of Sekar Bumi Tbk

| Ratio | 2017 | 2018 | 2019 | 2020 | 2021 | dari 2017 | dari 2018 | dari | dari 2020 |
|---|---|---|---|---|---|---|---|---|---|
| x1 | 0.52 | 0.48 | 0.12 | 0.14 | 0.14 | (0.03) | (0.36) | 0.02 | (0.00) |
| x2 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | (0.0026) | (0.00) | 0.00 | 0.00 |
| x3 | 3.19 | 2.59 | 0.03 | 0.03 | 0.04 | (0.600000) | -2.56 | (0.00) | 0.02 |
| x4 | 1.71 | 1.42 | 1.32 | 1.19 | 1.01 | (0.28) | (0.10) | (0.13) | (0.18) |
| x5 | 1.13 | 1.10 | 1.15 | 1.78 | 1.95 | (0.03) | 0.05 | 0.63 | 0.17 |
| | Z = 1,2 (X1)+1,4 (X2)+3,3 ( X3) + 0,6 (X4) + 1 (X5) | | | | | | | | |
| Z_ Score | 13.48 | 11.26 | 2.37 | 2.94 | 3.05 | | | | |
| | safe zones | safe zones | grei Zones | Grei Zones | Safe Zones | | | | |

Source: Processed Data

In the table above, it has been two consecutive years that the Sekar Bumi TBK company has been in safe zones with a Z value in 2017, namely 13.48 and in 2018, namely 11.26. However, from 2019 to 2020 the Z value has decreased which is influenced by the decrease in variable X3, this indicates the company's lack of ability to generate profits from company assets before paying interest and taxes.

**14.** Sekar Laut Tbk

Table 14. Z-Score Calculation Results for Nipoon Sekar Laut Tbk

| Ratio | 2017 | 2018 | 2019 | 2020 | 2021 | dari 2017 ke 2018 | dari 2018 ke 2019 | dari 2019 ke 2020 | dari 2020 |
|---|---|---|---|---|---|---|---|---|---|
| x1 | 0.09 | 0.09 | 0.11 | 0.17 | 0.22 | 0.00 | 0.02 | 0.06 | 0.04 |
| x2 | 0.11 | 0.14 | 0.18 | 0.22 | 0.28 | 0.03 | 0.04 | 0.04 | 0.05 |
| x3 | 0.06 | 0.07 | 0.07 | 0.10 | 0.11 | 0.01 | 0.00 | 0.02 | 0.01 |
| x4 | 0.94 | 0.83 | 0.93 | 1.11 | 1.56 | (0.10) | 0.10 | 0.18 | 0.45 |
| x5 | 1.43 | 1.39 | 1.61 | 1.62 | 1.52 | (0.04) | 0.22 | 0.01 | (0.10) |
| | Z = 1,2 (X1)+1,4 (X2)+3,3 ( X3) + 0,6 (X4) + 1 (X5) | | | | | | | | |
| _ Scor | 2.47 | 2.43 | 2.79 | 3.12 | 3.47 | | | | |
| | grei zones | grei zones | grei Zones | Safe Zones | Safe Zones | | | | |

Source: Processed Data

The table above shows that for three consecutive years PT. Sekar Laut Tbk is in the gray zones category where only variable X2 has increased. In 2020 the company managed to get out of the gray Zones with a Z score of 3.12. The cause of the company leaving the gray zones is that all X variables have increased, this proves that the company is trying its best to manage all of its financial elements so

that it can function better. In 2021 the company will also remain in safe zones with a Z value of 3.47.

**15.** Siantar Top Tbk

Table 15. Z-Score Calculation Results of Siantar Top Tbk

| Ratio | 2017 | 2018 | 2019 | 2020 | 2021 | dari 2017 ke 2018 | dari 2018 ke 2019 | dari 2019 ke 2020 | dari 2020 ke 2021 |
|---|---|---|---|---|---|---|---|---|---|
| x1 | 0.25 | 0.22 | 0.26 | 0.26 | 0.38 | (0.03) | 0.04 | (0.01) | 0.13 |
| x2 | 0.53 | 0.57 | 0.69 | 0.73 | 0.80 | 0.04 | 0.12 | 0.04 | 0.07 |
| x3 | 0.12 | 0.12 | 0.12 | 0.22 | 0.20 | 0.00 | 0.00 | 0.10 | (0.03) |
| x4 | 1.45 | 1.67 | 2.93 | 3.45 | 5.34 | 0.23 | 1.26 | 0.52 | 1.89 |
| x5 | 1.21 | 1.07 | 1.22 | 1.12 | 1.08 | (0.14) | 0.15 | (0.10) | (0.04) |
| | Z = 1,2 (X1)+1,4 (X2)+3,3 ( X3) + 0,6 (X4) + 1 (X5) | | | | | | | | |
| Z_ Score | 3.53 | 3.54 | 4.66 | 5.25 | 6.51 | | | | |
| | Safe Zones | Safe Zones | Safe Zones | Safe Zones | Safe Zones | | | | |

Source: Processed Data

PT Siantar Top Tbk has been in the safe zone for five consecutive years. In 2017 with a Z-Score value of 3.53 with an increase in variables X2 and X4 in 2018, the Z-Score value increased to 3.54. From 2019 to 2021, the X2 variable is a variable that is always increasing so that it can effectively generate retained earnings from total assets.

**16.** New Tunas Lampung Tbk

Table 16. Z-Score Calculation Results for Lampung New Shoots Tbk

| Ratio | 2017 | 2018 | 2019 | 2020 | 2021 | dari 2017 | dari 2018 | dari 2019 | dari 2020 |
|---|---|---|---|---|---|---|---|---|---|
| x1 | 0.02 | 0.18 | 0.15 | 0.14 | 0.15 | 0.16 | (0.03) | (0.01) | 0.01 |
| x2 | 0.19 | 0.20 | 0.22 | 0.22 | 0.24 | 0.01 | 0.02 | 0.01 | 0.01 |
| x3 | 0.09 | 0.06 | 0.06 | 0.05 | 0.05 | (0.02) | - | (0.02) | 0.00 |
| x4 | 0.42 | 0.41 | 0.45 | 0.43 | 0.44 | (0.01) | 0.03 | (0.01) | 0.01 |
| x5 | 0.63 | 0.53 | 0.49 | 0.56 | 0.76 | (0.10) | (0.04) | 0.07 | 0.20 |
| | Z = 1,2 (X1)+1,4 (X2)+3,3 ( X3) + 0,6 (X4) + 1 (X5) | | | | | | | | |
| Z_ Score | 1.46 | 1.48 | 1.45 | 1.45 | 1.70 | | | | |
| | Distres Zone | Distres Zone | Distres Zones | Distres Zones | Distres Zones | | | | |

Source: Processed Data

The results of the calculation of the Z-Score analysis above can be seen that for 5 consecutive years the company PT. Tunas Baru Lampung Tbk is in the Distress Zones category. The company must improve the company to try its best to manage all of its financial elements.

**17.** Ultra Jaya Milk Tbk

Table 17. Z-Score Calculation Results for Ultra Jaya Milk Tbk

| Ratio | 2017 | 2018 | 2019 | 2020 | 2021 | dari 2017 ke 2018 | dari 2018 ke 2019 | dari 2019 ke 2020 | dari 2020 ke 2021 |
|---|---|---|---|---|---|---|---|---|---|
| x1 | 0.51 | 0.39 | 0.44 | 0.37 | 0.44 | (0.12) | 0.05 | (0.06) | 0.07 |
| x2 | 0.06 | 0.70 | 0.73 | 0.66 | 0.83 | 0.64 | 0.02 | (0.07) | 0.17 |
| x3 | 0.19 | 0.16 | 0.16 | 0.16 | 0.22 | (0.03) | 0.00 | (0.00) | 0.06 |
| x4 | 4.29 | 6.11 | 5.93 | 1.20 | 2.26 | 1.82 | (0.18) | (4.73) | 1.06 |
| x5 | 0.94 | 0.98 | 0.94 | 0.68 | 0.89 | 0.04 | (0.04) | (0.26) | 0.21 |
| | Z = 1,2 (X1)+1,4 (X2)+3,3 ( X3) + 0,6 (X4) + 1 (X5) | | | | | | | | |
| Z_ Score | 4.83 | 6.63 | 6.57 | 3.29 | 4.67 | | | | |
| | Safe Zones | Safe Zones | Safe Zones | Safe Zones | Safe Zones | | | | |

Source: Processed Data

Based on the table above shows that for 5 consecutive years the company PT. Ultra Jaya Milk Tbk remains in safe zones. An increase in the Z value from 2017 to 2018 followed by an increase in the value of the variables X2 and x4 can effectively generate retained earnings from total assets. In 2019 to 2020 there will be a decrease in the value of Z and in 2021 it will be affected by the variable x3 and in

2021 it will again increase which will be affected by the increase in the values of all variables.

## D. DISCUSSION

The results of the analysis of the 17 companies in the food and beverage subsector studied show that some companies are in a gray condition, meaning that companies need to anticipate potential bankruptcy by improving their financial performance so that the companies are in a safe condition. Not a few of the research samples show that the company is in a safe condition, so the company must try to maintain its condition so that it does not enter into gray zones or distress zones.

From the results of the study there were three companies for five consecutive years in a Distress Zones condition, the companies that experienced financial distress during this successive wereTunas Baru Lampung Tbk, Budi Starch & Sweetener Tbk, andPT FKS FOOD SEJATERA Tbk This is caused byvariable X2 dominates the decrease in the value of Z, which describes the company's ability to generate retained earnings. And 3 companies experienced Financial Distress for 2 consecutive years, because the X5 variable decreased so that sales or income decreased.

The results of the study also indicate that there are five companies that for five consecutive years have managed to maintain their company value to remain in a healthy condition (safe zones). Of the five companies that have been in good health for the past five years, the company with an increasing Z-Score value every year isSiantar Top TbkThis company has survived consistently for five consecutive years, increasing every year compared to other companies.

The variables that have the most influence on the occurrence of a decrease in the value of the Z-Score are the variables X2, X4 and X5 where the liquidity and solvency capabilities of many companies have decreased. Companies must further increase retained earnings and working capital owned and share capital to bear the company's debt burden.

## E. CONCLUSION

This research was conducted to predict the results of financial distress assessment in food and beverage subsector companies using the AltmanZ-Score method. After calculating the ZScore values produced by the 17 companies in the food and beverage subsector found in the research sample, there are companies that have experienced a consistent increase from 2021-2022, some have experienced a consistent decline from 2017-2021, and some have remained constant. from 2017-2021.

## F. SUGGESTION

The research has limitations related to the research period for the company sample, namely five periods, namely 2017-2021 and the sample in this study only takes food and beverage subsector companies listed on the Indonesia Stock Exchange (IDX). Future research is suggested to increase the research period and be developed in the food and beverage subsector companies in order to describe the

condition of the food and beverage industry in Indonesia. Further research can also be developed by using other methods as a comparison of bankruptcy prediction results.

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